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the transfusion service for a period of more than 30 minutes. We also analyze the economic cost of these discarded packages.
During the first 7 months, the impact of the implementation of a protocol for the delivery of blood components to the operating room in portable coolers with controlled temperature was evaluated, both in the number of blood components that were reused and the savings that this entailed.
Results and Discussion: Discarded units in the previous 7 years were: 277 in 2009, 163 in 2010, 146 in 2011, 108 in 2012, 129 in 2013, 110 in 2014 and 110 in 2015 with a total cost of €161,119.
The provisional results of the first 7 months since its implementation showed 108 sent portable coolers, with a total of 405 Units of blood components (243 CH, 146 FFP and 16 PC).
The number of units of blood components returned to BB and reused was 74 (52 CH, 18 PFC, 4 PQT). Only 2 units of CH and 2 of PFC have been rejected by BB.
The savings calculated at the official price of the Community of Madrid in these 7 months was €8,700.
The Transfusion committee allowed the detection of an easily avoidable expense through the purchase of 3 portable coolers, accumulators and temperature control systems, which were amortized in a single month.
Conclusions: The development of a protocol for sending portable coolers with blood components to the children's surgical block will allow an estimated annual savings to the hospital and the Community of Madrid of €15,000.

12AP05-4

Effects of balanced crystalloids and colloids on haemostasis: in vitro assessment

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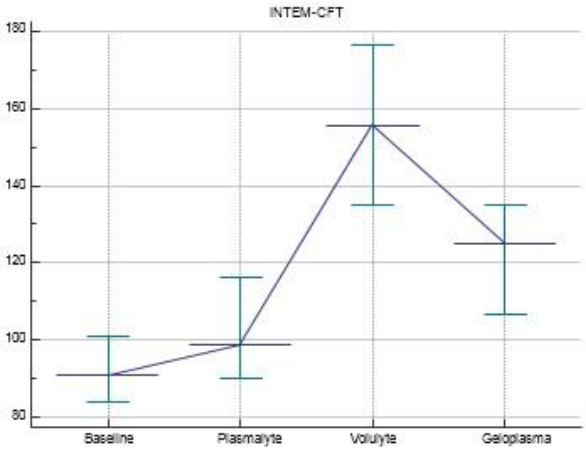
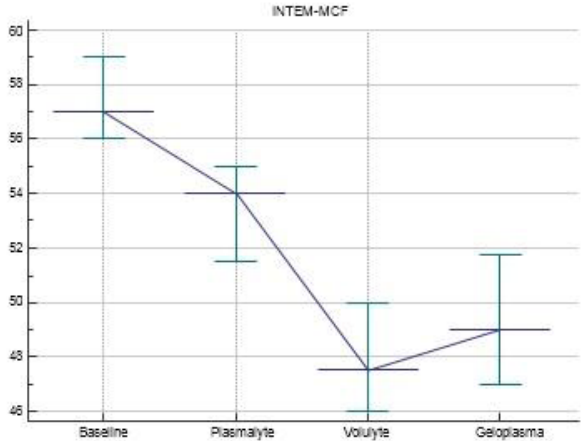
Background and Goal of Study: Massive bleeding may complicate perioperative course and remains the primary cause of death in about 30% of major trauma patients[1]. According to current guidelines[2,3], crystalloids and colloids are used as the first line treatment in fluid resuscitation. However, they may have deleterious impact on haemostasis. Therefore we aimed to investigate effects of balanced crystalloid and colloid solutions on coagulation and fibrinolysis in an in vitro setting.
Materials and Methods: Blood samples drawn from 32 young healthy males were diluted with study fluids to make a 20-vol% end-concentration. The fluids used were: crystalloid solution (Plasmalyte®), 4% succinylated gelatin (Geloplasma®) and 6% HES 130/0.4 (Volulyte®). Rotational thromboelastometry (ROTEM®delta) and platelet aggregometry (Multiplate®) were implemented at baseline and after dilution. CBC, aPTT, PT, fibrynogen, D-dimers were also performed.
Results and Discussion: Both succinylated gelatin and HES showed deranged INTEM (CFT, AA, A10 and MCF) and FIBTEM (A10, MCF) parameters ($p<0.01$), however the effect of HES was more apparent (Fig. 1). In EXTEM, only HES significantly affected coagulation (i.e. CT prolongation). There was no effect on fibrinolysis or platelet function, as evidenced by unchanged ML and TRAP values, respectively. In standard laboratory tests dilutional effect was found, however all investigated parameters stayed within reference values.



[INTEM CFT after mixing with study fluids]



[INTEM MCF after mixing with study fluids]

Conclusions: Despite marked haemodilution balanced crystalloid cannot affect coagulation. Balanced colloids impair clot formation and firmness, although the effect of HES is more pronounced. None of the fluids significantly impacted fibrinolysis or platelet function.
References:
1. Tieu BH et al. Coagulopathy: Its pathophysiology and treatment in the injured patient. World J Surg. 2007;31:1055-64.
2. Kozek-Langenecker SA et al. Management of severe perioperative bleeding: gudelines from the European Society of Anaesthesiology. Eur J Anaesthesiol. 2013 Jun;30(6):270-382.
3. Rossaint R et al. The European guideline on management of major bleeding and coagulopathy following trauma: fourth edition. Crit Care. 2016 Apr 12;20:100.

12AP05-5

Prevention of disorders of blood coagulation at the patients after total hysterectomy

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Background: Each year in the world the diseases of reproductive system is diagnosed in more than 700,000. In 8.35% of patients with diseases of reproductive system pulmonary embolism was the cause of death, and at 43% - the background for other fatal complications.
Materials and Methods: The results of surgical treatment of 96 patients after hysterectomy under epidural anesthesia during the period from 2014 to 2016 entered the study. Condition of hemostasis was monitored by 12 standard biochemical tests, as well as the new instrumental method - low-frequency piezoelectric haemoviscoelastography preoperative, intraoperative and every day during 10 days after surgery. Prevention of thrombosis in group 1 (n=46), conducted by Bemiparin 3,500 IU: the first injection 12h before epidural anestesia, than at 12h after the operation in the future once a day for 10 days; group 2 (n=50) received unfractionated heparin (UFH) 5,000 IU: the first 6h before epidural anestesia than 6h after the operation, than 4 times per day for 10 days.
Results and Discussion: All included in the study patients prior to surgery in the hemostasis system direct a shift towards hypercoagulation and inhibition of fibrinolysis : increase in MA (maximum density of the clot, fibrin-platelet constant of the blood) at 20.7% ($p<0.001$) reduction of IRCL - the intensity of the retraction and clot lysis to 13.6% ($p<0,05$) in both groups compared to normal rates. At first day after surgery in patients treated by Bemiparin (group 1) declines MA , ICD - the intensity of coagulation drive to 12.7 ($p<0,05$) and 9,6 % ($p<0,001$), respectively, and IRCL increased be 4,4% ($p<0,001$). At the fifth day condition of hemostasis in both groups came almost to the same value - a moderate hypocoagulation, normal activity of fibrinolysis. At the 7th day of postoperative period, thrombotic complications developed in 2 patient of first group (4.3%). In the second group, complications developed in 4 patients (8%) patients; in 3 causes of them - was deep venous thrombosis, and in 1 case of coagulopathic bleeding.
Conclusion(s): Using combination of Bemiparin and epidural anesthesia reducts the level of postoperative thrombotic complications, such as deep ve-

nous thrombosis, massive bleedings at the patients after total hysterectomy. Using low-frequency piezoelectric haemoviscoelastography (LPTEG) enables quickly identify disoders of hemostasis in patients after hysterectomy before, during and after the surgery.

12AP05-6

Observational study to assess the safety and clinical effectiveness of the Hospital Universitario de Canarias massive transfusion protocol: a pilot design studio

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Background: Bleeding, together with coagulopathy, remains one of the leading causes of avoidable hospital deaths among patients. Several studies have shown that transfusion protocols (MTP) improve survival in patients with severe traumatic injury. Transfusion with a predefined ratio of 1:1:1 (1 each of red blood cells [RBC], frozen plasma [FP] and platelets) has reduced the severity of trauma-induced coagulopathy and the mortality after severe trauma. Protocol has its challenges and can increase the risk of respiratory complications. This study was conducted to evaluate the feasibility of a 1:1:1 MTP and its effect on mortality and complications among patients with massive hemorrhage.
Methods: We designed a prospective observational study, 35 patients were included (60% men, 51% urgent surgery).The population studied includes all patients who needed a massive transfusion in a surgery. Patients were divided in two groups: group 1 intervention (MTP application) and group 2 non intervention (transfusion of non-guided MTP). Safety was measured based on 30 day mortality and survival free of acute respiratory distress syndrome.
Results: Both groups were similar about age, sex, APACHE-II score and preoperative hematocrit and INR. Patient's characteristics are given in Table 1.
Red blood cells administration was similar in both groups, in group 1(n=20) 3,5±2,6, in group 2 (n=15) 4,5±1,8 (p=0,18). However FP and PLT administration were higher in group 1 (PFC 2,6±2,2 vs 1,4±1,6 in the group 2, p=0,1) and PLT (0,65 ± 0,67 vs 0,33 ± 0,61, p=0,1), while administration of fibrinogen (1,45 ± 0,88 vs 0,87±1,2, p=0,07), tranexamic acid (2,55±1,09 vs 1,6±1 p=0,03) and protrombines complexes (900±911 vs 333±523, p=0,07) were higher in group 1.
Group 2 showed lower 30 days mortality (40% vs 21,4%, p=0,3) and transfusión related acute lung injury were similar between two groups (2 [10%] vs 3 [20%)] p=0,63).

	Group 1 (n=20)	Group 2 (n=15)	P value
Sex (male) — n (%)	12 (60)	9 (60)	1
Age (years)	55±19	57±18	0,83
Surgery — n (%)			0,24
Elective	8 (40)	9 (60)	
Urgent	12 (60)	6 (40)	
APACHE II-score	12,6±5	13±7	0,93
Hematocrit (%)	37±6	33,4±7,4	0,17
INR	1,12±0,32	1±0,15	0,78
RCBs (Units)	3,5±2,6	4,5±1,8	0,18
FP (Units)	2,6±2,2	1,4±1,6	0,1
PLT (Units)	0,65±0,67	0,33±0,61	0,1
Tranexamic Acid (g)	2,5±1	1,6±1	**0,03**
Prothrombin Complex (IU)	900±911	333±523	0,07
Fibrinogen (g/L)	1,45±0,88	0,87±1,2	0,07
Intraoperative bleeding (ml)	2640±1467	2090±866	0,24
TRALI	2 (10)	3 (20)	0,63
All-cause 30-day mortality	8 (40)	3 (21)	0,3
Death from exsanguinatio	2	1	
Death from multiple organ failure	5	–	
Anastomotic Leak (sugical)	1	–	
Right heart failure	–	1	
Cerebral stroke	–	1	

INR: international normalized ratio, FP: frozen plasma, TRALI: transfusión related acute lung injury, PLT: platelets, RCB: red blood cells.

[Table 1. Baseline characteristics]

Conclusion: Adherence to a management protocol for massive bleeding is feasible and allows a homogenous treatment of patients. The 30 day mortality and acute respiratory distress syndrome were similar between the groups. Larger randomized trials are needed to evaluate the efficacy of such a protocol.

12AP05-7

New proposal for the treatment of asymptomatic patients with acquired factor V deficiency

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Background: Acquired factor V deficiency (AFVD) is a rare but challenging bleeding disorder with approximately 150 cases reported in the literature. Its clinical presentation may span from the asymptomatic laboratory abnormalities to the life- threatening bleeding. Current recommendations emphasize the importance of decreasing the anti-FV antibody titre only if bleeding symptoms are present. (1) Based on this report, a new proposal for the treatment of asymptomatic AFVD patients could be made.
Case report: A 72-year old caucasian woman was admitted to the hospital for the craniotomy and evacuation of the traumatic subdural hematoma. The preoperative history was unremarkable. The routine laboratory testing on the 14th postoperative day showed great disturbance only at these coagulation parameters: PV 0,06, APTV (s) >120 and INR >6, what was contrary to the normal coagulation profile before, but there was not any clinical bleeding. The fresh frozen plasma was administered but without effect on the coagulation parameters. Haematologist was consulted and AFVD was detected: FV< 0,05 kIU/L and anti FV 25 BU/mL. On the 21th day tracheal bleeding and enterorrhagia occurred. The packed RBC's (700 mL) are given, plasmapheresis (2,5 L plasma was exchanged with each plasmapheresis) and methylprednisone (2 mg/kg iv.) started immediately and continued daily for the next 5 and 8 days, respectively. The FV inhibitor titre fell significantly after the first plasmapheresis (50,2 % clearance). The bleeding has stopped on the 25th day, the coagulation tests were normal without FV inhibitor in the follow up and the patient has transferred to the ward in a good clinical condition.
Discussion: Combination of corticosteroid and plasmapheresis proved optimal in this patient when the bleeding occurred. Because of the initial asymptomatic nature of the AFVD, we decided, according to the literature, not to commence with the therapy. However, that has put the patient at the risk to the subsequently fatal haemorrhage.
References: 1. Collins PW, et al. Diagnosis and management of acquired coagulation inhibitors. BJH 2013; 162:758-773.
Learning points: Prevention of the haemorrhage which could be fatal is of utmost importance at AVFD. According to this and based on our experience, we suggests that multimodal immunosupresive therapy at these patients should be promptly started not only at the symptomatic patients but also at the patients without evidence of bleeding as well.